

Abstract

A continuous inkjet device emits a stream of fluid from nozzles. Droplet break-off is stimulated by the application of external perturbing stimulus to the stream in a manner that controls the formation of satellite drops. Satellite behavior is controlled by the use of a composite perturbing signal, composed of at least two frequencies that are not harmonically related, but are related by the ratio of small integers. In one embodiment, the use of two perturbing signals with frequencies f_L and f_H having a ratio of M/N , where M and N are integers, and M is not a multiple of N , and N is not a multiple of M , produces a repeating drop pattern of either M or N drops at the beat frequency of the combined signal, the constituent drops in said repeating pattern have different satellite formation characteristics. With suitable choice of phase and amplitude of the two component perturbing signals, at least one drop in the repeating pattern is observed to have favorable satellite behavior, or the absence of satellites, and is optimal for printing. This stimulation method, producing a repeating pattern of drops of different satellite behavior may then be aligned with the phase of a guard drop scheme, in which selected drops in a sequence are purposely charged and guttered in order to specifically reduce electrostatic crosstalk on print-selectable drops. By aligning the phase of the optimal printing drops of the stimulation means with the print-selectable drops of the guard drop scheme, all droplets with sub-optimal satellite behavior are thereby guttered and droplets with optimal satellite behavior are available for printing with great accuracy.